In the United States Patent and Trademark Office

Docket Number: NPX016 US

Application Filed: May 23, 2000

Applicant Name: Silverbrook Research Pty. Ltd.

Title: Computer System Control With User Data via Interface Surface

Petition to Make Special

Assistant Commisioner for Patents
Washington, District of Columbia 20231

Sir,

Applicant hereby respectfully petitions that the above application be made special under MPEP Sec. 708.02 for the following reasons; attached is a declaration in support thereof:

V. Environmental Quality Will Be Enhanced

VI. Energy Savings Will Result

Very respectfully,

Kia Silverbrook

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Declaration in Support of Accompanying Petition to Make Special

In support of the accompanying Petition to Make Special, applicant declares as follows:
1. Silverbrook Research is the applicant in the above identified patent application.
2. The present invention is part of a multi-facetted effort to develop a new form of information distribution. The system, collectively called "Netpage", has the potential to substantially reduce energy use, transportation requirements, and paper use, giving environmental benefits such as reduction of carbon emissions, maintenance of biodiversity, and a reduction in pollution. These benefits fall under two reasons to make special under MPEP Sec. 708.02, as explained below.

Reason V – Enhancement of Environmental Quality

Netpage can significantly reduce the use of paper in many industries. Some examples are:

- Approximately 40% of all magazines printed remain unsold or are otherwise junked before they reach a reader. This inefficiency in inherent in the 'print and distribute' system that must be used by commercial printers due to the current absence of a viable digital home magazine printing technology. Most magazines also have many more pages than are likely to be read. Netpage allows only those pages which are of interest to the reader to be printed. This number of pages will vary from reader to reader, but may be around one quarter as many as are in current magazines. Thus, if Netpage is used for magazine distribution, the paper use may be reduced by around 90%.
- Newspapers – In 1986, US newspapers used 13 million tons of paper. A substantial majority of newspaper pages go unread, as they are not printed selectively for each reader. A customized newspaper need only have a small fraction of the pages of a traditional newspaper, and can therefore use proportionally less paper.
- Direct mail – the typical response rate for direct mail such as brochures and catalogs is around 2%. This means that 98% of all of the paper used in direct mail is wasted. Studies have shown that by targeting direct mail only to those who are in the appropriate demographic, the amount of paper use can be reduced to around 10% of a 'scattershot' approach. Netpage uses extensive demographic interest profiles to allow efficient delivery of direct mail to only those people who are likely to be interested.
- Netpage prints on both sides of the page simultaneously. This almost halves the amount of paper used compared to single sided printing, as is typically used with computer printers.

Reason VI – Energy Savings

The energy savings from a reduction in paper use are substantial. The primary energy cost of manufacturing paper in 1998 was around 17.8 gigaJoules per tonne [1]. Using this figure, the 13 million tons of paper used by US newspapers in 1986 would have required around 230 petaJoules to manufacture. This is equal to a continuous consumption of 7.4 gigaWatts over the year.
If the amount of paper in those newspapers was halved by using the Netpage system disclosed herein, the power savings in the US would be around 3.7 gigaWatts, equal to the output of about four full scale nuclear, coal, or natural gas electricity generating plants.
Similar energy savings can be achieved for magazines, direct mail, and other printed media.

Netpage can also operate as a 'web browser' using the interactive paper technology developed as part of this project. Most of the everyday functions of current computer based web browsers can be achieved using interactive paper, reducing the need for personal computers to operate as browsers.

The Memjet™ printing technology invented for this project has an energy consumption of around 120 nanoJoules per printed drop, compared with several microJoules per drop for thermal inkjet technologies. This dramatic reduction in energy allows a Netpage printer to consume typically less than 50 Joules to print a full color double sided sheet of paper. Unlike a computer screen, once the page is printed, there is no further energy consumption to keep the images displayed.
The Netpage printer goes into 'sleep' mode when not printing, with very low power consumption.

By comparison, estimates of the annual energy use of a household personal computer range from 130 to 262 kilowatt-hours (468 to 943 megaJoules) per year [2]. This is sufficient energy for a Netpage printer to print around 24 million pages.

However, a PC based web browser does not require sheets of paper to operate. For a balanced comparison with PCs, the energy cost of manufacturing this paper must be taken into account. An energy cost of 17.8 gigaJoules per tonne of paper equates to 53.69 kiloJoules per letter sized 50 GSM sheet. Including the 50 Joules required for a Netpage printer to print the sheet results in a total of 53.74 kiloJoules.

A magazine-quality double-sided sheet of paper can display around 10 computer screens worth of information. The time taken for someone to read 10 screens of information is approximately 10 minutes. A typical desktop personal computer consumes around 200 Watts, so 10 minutes operation results in an energy consumption of 120 kiloJoules. Therefore, the energy cost of both manufacturing the paper sheet and printing it may be around half the energy used in reading the equivalent information on a computer screen.

As computers currently consume around 2% of the entire US electricity supply [2], and as internet access is a major and growing application of computers, substantial energy savings are possible by replacing the PC with more energy efficient means of internet access.

[1] Paper Federation of Great Britain

[2] Statement of Jay E. Hakes, Administrator, Energy Information Administration, Department of Energy, before the Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs, Committee on Government Reform, United States House of Representatives, February 2, 2000

I further declare that all statements made herein of my own knowledge are true and that all statements made upon information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application and any patent issuing therefrom.

Very respectfully,

Kia Silverbrook

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Australia